Robertson

Illustration Farms of the
Committee on Lands

ILLUSTRATION FARMS OF THE COMMITTEE ON LANDS

EVIDENCE

OF

JAMES W. ROBERTSON

CHAIRMAN, COMMITTEE ON LANDS, COMMISSION OF CONSERVATION

BEFORE THE

SELECT STANDING COMMITTEE

ON

AGRICULTURE AND COLONIZATION

1911-12

Printed by Order of Parliament as advance sheets of the Committee's Final Report.

OTTAWA
PRINTED BY C. H. PARMELEE, PRINTER TO THE KING'S MOST EXCELLENT MAJESTY.
1912

19909—1

ILLUSTRATION FARMS OF THE COMMITTEE ON LANDS

HOUSE OF COMMONS,

ROOM No. 34,

THURSDAY, January 24, 1912.

The Select Standing Committee on Agriculture and Colonization met to-day at 11.15 o'clock, a.m., the Chairman, Mr. J. A. Sexsmith, presiding.

The CHAIRMAN.—Gentlemen, the time for commencing our proceedings has arrived, and I take much pleasure in introducing Dr. James W. Robertson, Chairman, Committee on Lands, Commission of Conservation, who will speak on some of the results obtained from the survey of farms conducted by that committee, more especially with reference to the Conservation of (*a*) Fertility, (*b*) Labour, and (*c*) Health. I am sure you will be delighted with Dr. Robertson's address and I hope and trust that excellent results will flow from it. This Committee, I think, has accomplished a great deal of good in the past, but I feel that more remains to be done. At some future occasion when we shall have more leisure at our disposal for discussion, we may be able to take up some of the problems that confront us and arrive at suggestions of a practical character, which will be helpful to the great industry of agriculture. I now call upon Dr. Robertson to address you.

Dr. ROBERTSON.—Mr. Chairman and Gentlemen, I welcome this opportunity to come before the Committee and to associate myself with it in the consideration of means for the improvement of agriculture and the progress of rural interests generally. It is well over twenty years since I first had the honour of appearing before this Committee, and ever since that time I have observed something of the great service which the Committee has been rendering to Canada. While I was the head of a college, I commended the reports of this Committee as one of the best means of giving the students a knowledge of the progress of agriculture in Canada. The reports are not merely of historical value. They are full of suggestions and information for the men who live on the land and also for the men who serve them as instructors and in other professional capacities. I hope I may be permitted for many years to contribute my quota to the reputation of this Committee by the quality of the service it will continue to render to the people of Canada.

SURVEY OF FARMS IN 1910.

The subject of which I am to speak this morning arises out of a survey of farms conducted by the Committee on Lands of the Commission of Conservation. The Commission of Conservation was constituted, as you know, a few years ago, to take into consideration all questions that have to do with the conservation and better utilization of the natural resources of Canada. It is called upon not merely to make inventories, to collect and disseminate information, but also to conduct investigations with a view to discovering how the natural resources could best be utilized and conserved. The Commission itself is an important body of citizens. It is composed of three members of the Federal Government, nine members of the Provincial Govern-

ments, and twenty other men chosen because of some peculiar fitness, from experience or training or position, to render good service to Conservation. The Committee on Lands is composed of eight of these members, together with the ex-officio members. The present work of the Committee on Lands of that Commission is an investigation as to how the resources of the farms can be utilized and conserved in the very best way. When the Commission held its first meeting in 1910, the Committee on Lands made a provisional report to this effect: That it should begin its work by the collection of information by investigations and by the testimony of farmers and others, (*a*) as to whether agricultural lands are being depleted of fertility or are being improved in that respect, and (*b*) as to whether there is a dangerous prevalence of weeds and other hindrances to the progress of profitable farming. That was to be one part of our work—one of the six parts—and that is the part I propose to deal with this morning.

The investigation was begun during 1910, when 985 farms were visited and examined. It was not considered a good plan to confine an investigation of a matter like this to a few areas or to small areas. From such sources the information might be so incomplete as to be misleading and of little value. Therefore, 985 farms were examined in 1910 on the basis of about 100 in each province, and in groups of about 30 or more farms adjoining each other in each district. The examination was undertaken with the co-operation of the Provincial Departments of Agriculture, and they suggested the names of men whose knowledge of local conditions enabled them to get into close touch with these farmers. The information obtained was the joint result of the observations of the collector, and of the farmer himself. The main impressions left on our minds from the first survey may be stated in two sentences: While a systematic rotation of crops is essential to permanent good farming, on only nine percent of all the farms examined was such a plan followed in 1910. And the reports revealed in detail, in such a manner as to carry conviction, that weeds are very prevalent—dangerously prevalent. That is a very grave state of affairs.

After recent observations in the United Kingdom, and also in France, Switzerland, Germany and Denmark—and to enable me to get more complete and useful knowledge of the rural conditions in these countries, I travelled by road over 3,000 miles in June, July and August—I was very much impressed with the notable differences between the appearance of the farm fields in Europe and in Canada. A real weedy farm, with the exception of one limited area in Bavaria, was an uncommon spectacle. On the other hand, if you take the train from Ottawa to Montreal, or from any other centre in Canada for a distance of fifty or a hundred miles, to see reasonably clean farms or fields, that seem so to your eyes from the windows of the railway car, is the exception rather than the rule. I make this point now: in those countries and on those lands where weeds are kept in check or are becoming less harmful, some systematic rotation of crops is the common practice; and in our country where weeds are increasing in the most alarming way, a systematic rotation of crops is the exception—amounting to only nine per cent of the 985 farms visited in 1910. The survey in 1910 brought out this conviction from the summing up of the information obtained: that if farmers on the average had carried on their work according to the systems and methods followed by fifty of the best farmers whose farms were examined, they would have doubled the output of their crops from the same area. That is one of the convictions borne in on my mind, one of the convictions leading to hope, from the survey in 1910.

SURVEY OF FARMS IN 1911.

In 1911 we made a more extended survey. We had the advantage during the whole of 1911 of the services of Mr. Nunnick, the Agriculturist to the Commission of Conservation. The members who serve on the Commission, and on the Committee

on Lands, at best can give only a limited amount of time to its work. We are not paid officers. We give what time is necessary and give it cheerfully, but we cannot devote week after week or day after day to this work. By Mr. Nunnick's activity, a more complete co-operation was brought about between the Commission and the various agricultural colleges. Six districts were chosen in Ontario, six in Quebec and three in each of the other provinces. Where practicable, the same districts were continued that had been surveyed in 1910. In thirty-three districts, 1,212 farms were examined. Our collectors of information visited (in round figures) 100 farms in each province, plus 200 additional in the large Province of Ontario, plus 100 additional in the Province of Quebec. The farms in each district were practically in a block, touching each other. The information from each farm was put on a schedule for that farm. The printed schedules were used to enable the collector and the farmer to record their opinions in compact form for comparisons and for compilation. It provided records of information under four groups of headings, viz:—

I. Rotation of crops, seed, manure;
II. Weeds, insects, diseases;
III. Fuel, power, water; and
IV. Instances of good farming.

FUEL AND WATER SUPPLY.

I find that I will not have time to deal with the information obtained on the fuel and water supply, at any length this morning, so I will make one or two remarks regarding them now.

It is most important in a country like Canada, depending in a large measure for its fuel upon foreign sources of supply, that at least the rural population should have its fuel from land under its own control. It would be a great safeguard against any possible event which might occur The care of the farmers' wood lots for fuel purposes is beginning to receive attention. The planting of suitable areas to ensure a supply of fuel in future years is not being undertaken. Does this condition reveal any need for co-operation between the individual farmers and municipal or provincial or Dominion authorities? Is it desirable and practicable that the initial expense should be shared and the resulting revenue also shared? It takes a great many years for trees to grow. The life of the individual is comparatively short; and the life and needs of the community are very long. In this matter we need the long vision and the willingness to incur a long investment of a comparatively small sum.

From Mr. F. T. Shutt, Dominion Chemist at the Central Experimental Farm, we learn that out of several thousand farm waters examined by him, only about thirty per cent of those waters are first-class waters, fit to contribute to the enjoyment of good health. That state of things in a new, well-watered country like Canada, warns us to be careful and to make thorough investigations. Since we have an abundant water supply, pure water that is fit to drink without risk, should be used on every farm. Our survey had to do with the location of wells in relation to the house, the privy and the barnyard. It seems quite natural that a man locating on a new farm should put the well where it is most convenient. Sometimes, in order to ensure a supply of water without digging deep, the well was sunk where the ground is rather hollow, and in the course of years the ground there became impregnated with slops thrown from the house and with seepage from the privy and barnyard. This is not a particularly agreeable theme to dwell upon, but it is a necessary part of the investigation into the conservation of health on the farms. Occasionally I find myself pitched into by some ardent champion of real estate values because I persist in speaking of some of the features of Canadian conditions that do not reflect much

credit upon our way of doing things. But if a man is an honest doctor he does not smother up the symptoms in soothing palliatives. He tries to get at the root of the trouble, to get the patient to behave better and to prevent the recurrence of the disease. It is not only a question of typhoid fever, which, however, is becoming more prevalent, I am told by competent authorities, in the rural districts than in the towns. That is not the only important part of the question. I venture this in all kindness and humility, that if need be we could afford to see a number of the rural people die from typhoid without seeing much reduction in the number of our population—we could afford that dire consequence if it is one we must endure. But if you have a rural population using impure and polluted water week after week and month after month, you will get a degradation of life; you get a condition of health that becomes an invitation to diseases and debilities that are very serious. Out of this part of the survey we hope to obtain practical results in the way of some action being taken for treating the difficulty and preventing its continuation. The farmers have joined us in the most cordial and helpful way.

AGRICULTURE A NATIONAL INTEREST.

Before I come to a consideration of some details from the schedules, let me bring to your attention some matters which shed light on our problem which I have just mentioned—our problem of how the best we now do and have shall become common to all the farms in Canada. You would see in the public press the other day—I had the pleasure of receiving a copy of the monthly bulletin last night—that Canada last year had field crops of the total value of $565,000,000 at the places of production. That is a great deal of wealth called out of natural resources by the labour of farmers. That is different in its effect on the welfare of the people from the increase of money values by holding real estate. The wealth represented by the crops was created out of otherwise chaos by intelligent management and labour. It is here, with us, to go around. I appeared before this Committee some fifteen years ago, to speak on a theme that was then, in my judgment, and is now of great importance to agriculture, viz., the advantages of local illustration stations or farms for the service of surrounding farmers. At that time (1897) as nearly as one could obtain information, Canada produced field crops of the value of $270,000,000. Now we produce crops of the value of $565,000,000. That increase of 109 per cent in fifteen years would have been exceedingly creditable to our management and our ability if we had not increased our acreage under crops. And part of the increase in value is due to advance in prices. The increase of acreage has been, of course, mostly in the three prairie provinces of Manitoba, Saskatchewan and Alberta. The increase in them amounts to 11,836,000 acres, and the increase in the acreage under crop east of the Great Lakes amounts to about 3,000,000 acres in the same period. The increase in the value of the field crops from the three prairie provinces from 1897 to 1911 is, in round figures, $200,000,000. This increase does not include revenues from live stock or dairy products. It refers to field crops only. The west is certainly an important portion of the agricultural area of Canada; and it has become a very important part of the agricultural life of Canada. Last year its field crops had a value ($228,033,000) equal to forty per cent of the whole production. The Committee will see that the questions of conservation, the questions of utilization of agricultural lands, are questions affecting the prosperity, the stability, of every material interest in Canada. Everyone carrying on business or following an occupation in Canada is to some extent, directly and indirectly, affected by the progress, or otherwise, of the agricultural industry. Perhaps I have already referred at more than sufficient length to those salient features. I have done so in order that you might be with me, as to the point from which the question should be viewed, when considering and discussing means whereby we can do better hereafter than we have been doing. Farming is not

only an occupation to be followed by individuals for profits, but it is also a great national interest, having a dominating bearing on the fortunes of the nation, in all important ways—in the character of its population, in the possessions and prosperity of its citizens and in the permanence of opportunities for all its people to earn satisfactions in all lines of activity.

THE QUESTION OF LOCAL ORGANIZATION.

Let me return to the last page of the schedule for a moment. Of the 1,212 farms dealt with, a few emerged as instances of good farming, prominently better than others. The neighbours agree that these are better farms and that the owners of them farm better than they do. By means of the survey this year and next year, we desire to obtain more information as to the *causes* of their superiority and of their progress. Everyone admits the fact that they are superior. Our survey during two years has brought out some of the causes. We desire to learn to what extent these *causes can be applied* to all the other farms. We expect that a number of these most successful farmers will be willing to furnish a statement of their accounts and of the balance sheets from their farming operations. This is not a question of compelling the information or of prying into personal affairs for no useful purpose. We have found these natural leaders among the farmers willing and anxious to co-operate for the benefit of their locality. The idea of the Committee on Lands is to get the attention of the farmers of a locality directed with expectation, not to a show farm, but to the farm or farms of which the balance sheet shows a large margin of profit and a satisfactory condition of fertility and freedom from weeds. We have found the farmers to be most friendly and helpful in all this. In the second year, many of them who had weeds and diseased plants on their farms had specimens ready for the visit of the collector. He was not an unwelcome guest, but was expected and helped in all his duties. That itself is a promise of progress in co-operation. No farmer refused the information sought. A few farmers were indifferent and thought the whole effort to be only so much useless official recording; but the bulk of the farmers saw the meaning of it and are expecting real benefits from it.

In the last sheet of the schedule we have records of instances of good farming. In each group of farms there stood out prominently a few farms as being manifestly better than the others. They were evidently better in condition of the fields as to cleanness and fertility and also in quantity and quality of the crops. The records were taken according to the scale of points; and on each group a few stand out conspicuously above the rest. In each group of about thirty farms there can be picked out two, three, and sometimes four farms which are decidedly superior in condition and in management to the other farms which were around them. The gist of what I want to lay before you leads up to this: how can we help to make the systems, the methods, and the conditions, and the results in profits, of those best farms become common on the other farms? It is not a question of creating a new Government department that I am going to speak of, it is not a question of furnishing more scientific instruction from headquarters; it is a question of local organization, of local self-help, whereby the systems and methods practised on the best farms in a locality will permeate and prevail throughout the whole locality. Some other countries are far ahead of us in that. We are just beginning to do something in that direction.

HELPFUL AGENCIES.

These men are not unmindful of the value of the agencies which hitherto have contributed to bring about as good a state of agriculture as we now have in Canada. The credit is first of all due to the farmers themselves and their families. They have received assistance from many sources. The Dominion Experimental Farms and

the various other branches of the Dominion Department of Agriculture, such as the live stock, dairy and cold storage, and seed branches, have all helped the farmers; and the men on the best farms are the ones most ready to acknowledge the help they have received. Then there are the Provincial Departments of Agriculture, whose agencies are manifold. For example, there are the Agricultural Colleges, with all their extension work. The Province of Ontario now has some 100 trained and competent men travelling through the province doing instructing work. That is good, but in my judgment it is only a beginning. I offer you a little illustration. Twenty-six years ago, when I went to the Ontario Agricultural College as Professor of Dairying, I was the only official dairy instructor in the province. Last year the province had thirty dairy instructors. Consider how the Ontario dairy business has grown, not merely in volume of products, but also in improvements in methods and in the quality and reputation of its cheese and butter. I maintain that those thirty instructors in contributing to the enhanced prosperity of the province, were worth their salaries many times over. The illustration dairy stations, the cool curing rooms and the cold storage railway cars were all contributing factors. Undoubtedly we are making a good deal of progress. Professor C. C. James, Deputy Minister of Agriculture for Ontario, has said that the province has entered upon a great upward movement; and our records from the Ontario farms confirm that statement. He predicts that it is possible to double the field crops of Ontario in ten years, and there are instances where that has been done. The question is, can the same or similar means be effectively applied on other farms?—On practically all other farms? That is the crux of the problem. What are we going to do about it? Are we going to stand still and say: That is the indifferent farmer's own business; he that is indifferent, let him be indifferent still? Or shall we go together on the level of a united effort in each locality, organize ourselves for action in the locality, select the best managed farm or farms in the neighbourhood as illustration farms, whereon we may investigate the means for progress and for betterment. In that case, the natural leaders will emerge out of the united neighbourhood effort. Through these farms, new co-operations will be established with other neighbourhoods and with Government agencies like Experimental farms, official instructors and educational institutions.

COMPARISONS WITH TEN YEARS AGO.

Let us now consider the information obtained as to the yields of crops in the various provinces as compared with ten years ago. From Prince Edward Island 51 per cent of the farmers report an increase. That is good. I can recall the time when the Province was going down. Then the farmers went into growing clover, having some rotation of crops, developing dairying, using better seed grain, &c., with the result stated above. From Nova Scotia 49 per cent of the farmers, from New Brunswick 24 per cent, from Quebec 39 per cent, reported an increase as compared with 10 years ago; and from Ontario 24 per cent reported an increase of 50 per cent in ten years. When we come to Manitoba, it is not surprising that from 100 farms not one farmer reports any increase as compared with ten years ago, and not one farmer reports any increase as compared with twenty years ago.

By Mr. Schaffner:

Q. What does that statement mean?

A. One hundred farms were surveyed, and our collector of information took the opinion of the farmers themselves. He practically said: 'How are your crops, how is the fertility of the soil, compared with ten years ago? Are you going up or standing stil or going down in respect to the rate at which your farm yields crops?'

Q. By the acre?

APPENDIX No. 3

A. On the whole farm by the acre. Of the hundred farmers in Manitoba, 46 per cent reported a decrease since ten years ago, and 50 per cent reported a decrease since twenty years ago. These farms are in the older settled parts of Manitoba. The results are not surprising, because in that Province it has not been the practice to grow any gathering crops such as clover, beans or alfalfa, or any grass crops, in between the crops of grain. The farming has consisted in this kind of rotation: two years of grain and one of summer fallow, or three years of grain and one of fallow. What does summer fallow treatment do? It helps somewhat to clean the land from weeds, it conserves the moisture, and it destroys some of the elements of fertility. It destroys the fibre in the soil which is needed to hold loose particles of soil in position in the spring. Whole districts are menaced by the winds blowing the soil and the seed off the fields. The conditions of farming, the soil, the population and climate combine to perpetuate the kind of rotation which consists of two or three years of grain and one of fallow, with no crop in between that either gathers nitrogen or leaves the plant fibre from root, stems and leaves in the soil to hold it together. I do not want to be understood here, or quoted elsewhere, as blaming the farmers of Manitoba. The best farming there so far has followed in the main the only known lines for making profits by growing wheat. And out of that, and particularly out of the neglect of weeds in the older districts, conditions have been created which call for earnest consideration and action. It ought not to be a case of shutting one's eyes and asserting: 'You must not say one word about such a matter as that, because the statements will damage Manitoba.' Manitoba and the other prairie provinces do not need, and I am sure the farmers do not want, the false protection of such silence. The Provinces would damage themselves in perpetuity by shutting their eyes and maintaining silence in the presence of serious dangers to good farming which protects the fertility and cleanness of the fields; whereas the other course would help them to adopt methods towards conserving their heritage and ours, while obtaining good crops and good profits.

By Mr. Schaffner:

Q. What has the Experimental Farm at Brandon been doing all these years that it has not determined this matter for the farmer and given him some information?—

A. The Experimental Farm at Brandon has been doing a great deal. It has been engaged in experimenting with the growing of clovers, but it takes a good while to prove out systems and methods under new conditions and have them seasoned by experience. Some years ago Mr. S. A. Bedford, Superintendent at the Brandon Experimental Farm, did an immense amount of missionary work in agriculture, going among the farmers and informing them according to his knowledge and lights; and I should be happy to see Mr. Bedford in a position to use in a wider way the increased knowledge and light he now has. But while the Experimental Farms have been carrying on experiments and discovering some results on the Government Farms, hardly any body has been going to the farmer who has been farming for profit, and asking: 'What have you discovered?' If you have 1,000 of the most successful farmers, each experimenting for profits on his own farm, with the benefit of scientific counsel from experts, they will find out much of real value to the practical farmer; and they will be the men who will send to the Experimental Farms for more information and more light. By all means let us get the double light on the difficulties of the indifferent farmer, the light from the experimental farms made effective by the local illustration. I cannot impress this as deeply as its importance merits, but I want to impress it as deeply as I can this morning.

EXAMPLES FROM EUROPE.

Let me turn here to an illustration which comes to me when I think of agriculture in England. As far as the meagre and imperfect records show, the yield of

wheat on English farms was about 26 bushels to the acre 400 years ago. Then it went down until some of the records—I do not know whether the records are wholly reliable—point to a rate of between 8 and 10 bushels per acre some 200 years ago. From that time on they began to make improvements and progress; on some estates it became a rule that a farmer must follow a systematic rotation of crops. The chief means for restoring and improving English agriculture was a rotation of crops with a clover or a bean crop in between the grain crops Now the rate of yield in England is from 32 to 34 bushels of wheat per acre. That is a glance at experience spread over a period of four hundred years. From want of a good system of farming, the yield per acre went down to an exceedingly low level, and by the adoption of good systems and methods it has been raised to a high level.

From the long cultivated lands in Germany, there is a yield of some 10 bushels to the acre more than there was 30 years ago, as the result of the application of more intelligent methods and better management. In Hungary, on one of the large estates of which correct records have been kept, the increase in the yield per acre has been remarkable. Between 1851 and 1860 the yield of wheat was 10·9 bushels to the acre, and between 1891 and 1900 the average yield of wheat was 30·3 bushels to the acre. During 1851-1860 the yield of barley was 14·7 bushels to the acre; during 1891-1900 it was 43·9 bushels to the acre. The yield of oats was 17·1 bushels to the acre as against 51·3 bushels to the acre. The yield of Indian corn was 21·3 bushels to the acre during the former period, as compared with 41·6 bushels to the acre during 1891-1900. This has been brought about by intelligent and intensive cultivation instead of by following primitive methods.

TO BRING ABOUT ASSOCIATED EFFORT.

From the Experimental Farms we learn that a great deal of use is being made of the information by the intelligent wide-awake farmers. Professor James, a very competent authority on such subjects, says that the age of talking to farmers has gone by the day of demonstration is here. There is a difference between talking about agriculture, even in a most interesting way, and showing the farmer the application of systems and methods on an illustration farm managed for profits in such a way that he will understand, and want to do on his own farm, what he has seen being done on the other. We have not yet established the contacts between the local natural leaders in farming and the other farmers, such as prevail all over Denmark, for example. A farmer in Denmark who discovers anything from his farm whereby he obtains better crops, cleaner land and more milk, passes the knowledge on and the whole neighbourhood is ready to receive it. We must begin to correct our separatenesses, our isolations, our want of cordial co-operations. You cannot correct those by bulletins or by speeches. The way is to get the farmers to come together and do something for themselves and others, something definite, something they can see and understand—something that they can use for their own benefit. When each becomes a co-operating partner in some definite undertaking for the good of the locality, all grow strong in associated effort.

SYSTEMATIC ROTATION OF CROPS.

I come back again to some of the salient points of information obtained by this investigation—this survey of farms.

Dealing with rotation of crops, what have we found? We found first of all that in many localities the farmers did not know the real meaning of the phrase. You know I am reluctant to say anything that would seem to throw the shade of even a thin shadow of a suspicion on the knowledge and ability of our people. When they do not know the meaning of the phrase—systematic rotation of crops—I ask myself: Why should a farmer know if he has not seen and done the thing for which the phrase

stands? It is one thing to have lip ability to utter a phrase and another to have the knowledge of its meaning from experience of the reality it stands for. A systematic rotation of crops helps his farmer to spread his work over nearly the whole year, and that is a good thing. It helps in the cleaning of his land. By having a hoe or green fodder crop growing in rotation, he keeps the land clean for the sake of the advantage to that crop. I confess there are not many farmers who are willing to cut weeds just for the sake of seeing the land clean. That is not a state of mind and action easy to bring about. That may be why our weed suppression laws are nearly all dead letters. You can hardly get a man to go and cut weeds for the sake of seeing the fields clean; but he will keep his fields reasonably clean if he finds that the practice of doing that pays for the labour in the immediate crop. That is where the systematic rotation of crops comes in as an effective means of cleaning land. Its adoption will not dispense with all need for legislation on weeds, but it will make the application of our knowledge effective towards keeping down weeds. Systematic rotation provides for a variety of products and it results in a large increase in the yield per acre of every one of the crops. Mr. Grisdale, now Director of Dominion Experimental Farms, gave the committee an address on that subject last year, and has spoken many times concerning the immense increase in the yield of crops from this practice. At Rothamsted, in England—the first agricultural research station—where the experiment was conducted for 32 years between growing wheat and other grain crops in rotation, with a clover or bean or grass crop in between once every four years, and growing grain crops continuously, the gain was 114 per cent in the yield per acre of wheat from the systematic rotation which included clover or beans. The meaning of systematic rotation of crops is to have this sort of thing going on: that each crop is grown in such a way as to make and leave the land better for the next crop. That is the means of progress and of conserving fertility.

How many farms out of the 1,212 surveyed, followed a systematic rotation in 1911? Out of 100 farms in Nova Scotia there was systematic rotation on just eight; in Prince Edward Island, on six; in New Brunswick, on thirteen; out of two hundred farms in Quebec, on just eight; and out of three hundred farms in Ontario, on 159. In Manitoba there was none except the rotation with grain and fallow of which I have spoken; in Saskatchewan and Alberta, none, and in British Columbia, 11 out of 100.

Q. How do you account for that in the three Prairie Provinces?

A. Up to the present time no one has applied in a large way the growing of clover, the growing of corn, the growing of roots, or the growing of any grass crop in between the grain crops. A few farmers have begun in a small way on part of their farms. The problem is to have that done in a larger way on those farms and then on other farms and so spread over the Provinces.

In Nova Scotia 19 per cent of the farms had a systematic rotation on a small part of their farms. I will now give you the Provinces and percentages of farms on which there were no definite plans, or systematic rotation for crops, at all. This is not from the collector's opinion, it is from the farmers' own statements of their practice. In Nova Scotia 47 per cent. In Prince Edward Island, 90 per cent had an irregular, indefinite rotation. In New Brunswick—I am speaking of those who had no rotation with any system in it—40 per cent; in Quebec 76 per cent; in Ontario 17 per cent. I have already dealt with the Western Prairie Provinces. In British Columbia there were 37 per cent without any definite plan.

You can see the gravity of the situation which all this reveals. If rotation of crops is shown by experience to be a chief means for permanently profitable farming, keeping the land clean, and giving satisfactory employment to labour, and only a small percentage of our farmers, outside of Ontario, follow it, how can we get more farmers to adopt some suitable system? They do follow an excellent system of rota-

tion of crops on our Experimental Farms—they have done so for years—but the point is how to get into touch and contact with the indifferent farmer and cause him to feel that he can do this on his own farm and get him to begin to put it into his practice.

In New Bruswick, the summary of the best farmers' judgment is that where a four or five year rotation is followed the results are far ahead in every respect of those farms where no systematic rotation was adopted. In Nova Scotia a good many farmers reported they were intending to begin this practice. On a few farms where systematic rotation was followed the farmers reported they had obtained results of from two to three times as much feed for the live stock as they had previously obtained from their farms. In Quebec systematic rotation prevails on comparatively few farms, except in Huntingdon County, where it is rather general. The farmers, for instance in Bellechasse and L'Assomption acknowledge the value of the system in theory but few make a practice of carrying it out on the farm; and the consequence is that from these and other counties they report that weeds are getting very bad. Take a few items from the reports from the Province of Ontario. In the county of Dundas a great many have not considered the meaning of systematic rotation of crops as applied to their own farms. In Lanark County most of the farmers follow it on some part of the farm. In Ontario County a few follow a well planned system, most follow plans indefinite and irregular. They admit that shorter rotations are coming into use and are of advantage. In Waterloo County some farmers follow a systematic plan. Anyone who knows the Province of Ontario can almost trace the agricultural prosperity on the lines of the areas where systematic rotation of crops is followed. There you find the best buildings, the cleanest land, the largest crops, and the most prosperous and contented farmers. Apart from the systematic rotation of crops, or as a part of the practice in carrying out the system, an increasing number of farmers are following an after-harvest cultivation of fields to kill weeds and to put the soil into a good condition of tilth for the following crop.

SEED GRAIN.

Some information has been obtained as to the use of seed selected according to some system. Since Mr. Newman, of the Canadian Seed-Growers Association, is to address you on this subject in the near future, I will not take up time to-day by discussing the subject, beyond saying it is becoming a somewhat general practice for a farmer to choose a part of the crop which is particularly good and clean, to cut and store that portion by itself, and to use the grain from it for seed. That is a most excellent practice as far as it goes. However necessity for improvement is shown by the fact that some farmers reported that they sowed half a bushel extra per acre of common feed grain to make up for the dirt and the weeds it contained. How can we get at such farmers, and others far less careless, except by somehow inducing them to associate themselves with the best farmers in their locality, to watch how they manage, to get advice from them and then to seek to put into practice what they have learnt. Seeing that the seed is reasonably clean and vital is not going far enough. The best farmers select strains of seed of fine quality for the market, strains with vigor in the plants which enables them to resist the attacks of rusts, and strains which have been proven to be suitable for their kind of soil and their locality and to be more than usually productive. May I cite two cases to make very clear the fact that immense improvement to Canadian agriculture is practicable by the systematic selection of grain for seed. One farmer told me that he had sold 15,000 bushels of wheat from his farm since harvest of 1911 at $2 per bushel; and the men who got it will be, I am sure, immensely satisfied with the results on their own farms. He could not nearly meet all the demand. The farmer who took that thousand dollar prize in gold for the best wheat in America at the New York 'Back to the Land Exposition,' the other day was a Canadian, Mr. Seager Wheeler, of Rosthern, Sask. It

won out as the best specimen of wheat grown in America—as judged by American experts at an American Exposition. It was awarded the $1,000 prize in gold. The original was a wheat bred and selected at the Central Experimental Farm. After Mr. Seager Wheeler obtained it he applied the system of selection according to the rules of the Canadian Seed Growers' Association; and he has written to the Secretary of the Association gratefully acknowledging the benefits he derived.

USE OF CLOVER SEED.

Few farmers sow enough clover seed with their grain crops. Many farmers use three pounds of clover seed per acre; some use five and a very few use 10 or 12 pounds. The farmers who use 10 or 12 pounds report that they get far better results than from the smaller quantity of seed. The schedules show the percentage of the acreage of grain crops which are seeded with clover. In Nova Scotia it is 60 per cent, in Prince Edward Island 57 per cent, in New Brunswick 50 per cent, in Quebec 74 per cent, in Ontario 45 per cent, and in British Columbia 42 per cent. There has been an immense improvement in that respect during the last ten years; but there is need for progress in the direction of using more pounds of clover seed to the acre.

A CASE OF SMUT IN OATS.

Diseases of plants are becoming in some districts a menace to profits. Some farmers are preventing such as smut by the treatment of the seed grain. However, neglect is evident in that respect. A striking illustration of that was given in the county of Dundas when the Agriculturist was there. He discussed with the farmer the question of diseases of plants and whether he was troubled with smut in his oats. The farmer replied that it was no trouble to him, that smut did not bother him at all. Mr. Nunnick examined the crop in the field in which they were then standing, and without moving his position reached out and picked 43 heads of smut. That farmer's eyes were opened. It was a revelation. Hereafter he will treat the seed grain to prevent smut.

WEEDS A NATIONAL DANGER.

A few words about weeds. The survey shows that they are not merely a serious menace but an increasing menace in the older provinces as well as in the newer ones. The Russian sow thistle is a case in point. It is reported as coming into the county of Lanark, only six years ago. The records show that it has already become so firmly established that farmers say some farms will have to be abandoned. You would not think that to be an exaggerated way of putting it if you had seen some farms I have myself observed. I do not know of any weed introduced into Canada that at all approaches the Russian sow thistle for the damage it does, and the persistence with which it spreads.

By Mr. Webster:

Q. In what section of Lanark was that?

A. I cannot say which farm it was.

Q. I understood you to say you had seen some of the farms?

A. I have seen the condition of other farms, but not those to which I refer as having to be abandoned.

In Waterloo County it is becoming serious. In Ontario County some farmers say they are controlling it by means of rotation of crops. It is reported from 42 per cent of the farms in Nova Scotia, from 89 per cent of the farms in Prince Edward Island, from 15 per cent of the farms in New Brunswick, from 62 per cent of the farms in Quebec, from 56 per cent of the farms in Ontario, from 30 per cent of

the farms in Manitoba, from none in Saskatchewan and Alberta, and from 17 per cent in British Columbia. It is a great evil and injury already, although it has been here only a short time.

Wild oats are prevalent, and especially harmful in the Prairie Provinces, where the kind of rotation that will kill wild oats is hardly at present practicable. This year our survey took in one new district in Manitoba. In the survey of farms for 1910 every farm surveyed in Manitoba reported wild oats; this year 94 per cent reported them—a few farms in the district taken in this year did not have any. One was added to the survey in Saskatchewan also. Last year, 71 per cent reported wild oats, this year 63 per cent reported it. Last year in Alberta 3 per cent reported wild oats, this year 31 per cent. It is becoming a serious national peril in the Prairie Provinces. Legislation does not stop it a bit. You cannot make either the Russian sow thistle or the wild oats take any heed of the law; and so far we have not been able to make men obey the weed laws. If they have to cut the weeds merely for the sake of making the place clean, or to obey the law, the weeds continue to multiply. The incentive to cut weeds is profit from the crop in which they begin to grow. The problem is difficult, difficult in the extreme. Local co-operation, local investigations of practicable means, may bring light and remedies.

In some places weeds in the pasture fields become such a menace that, as in the county of Brome, the orange hawk weed has reduced the carrying power of the pasture fields by one half in less than ten years. There is as yet in practice no way of killing it that is economical and effective.

By Mr. Bowman:

Q. What is your experience with bindweed?

A. It is quite bad and increasing in three provinces, I think.

Q. Do you not think it is a worse weed than the Russian sow thistle?

A. Well it, and the stink weed, together with the Russian sow thistle and wild oats are about four of a kind in weeds.

SCARCITY OF LABOUR.

Before I come to the last part of my theme, I have one or two remarks to make on the question of farm labour on which also we made inquiries. It would be easy, one will say, to do all this sort of thing, to have systematic rotation of crops, and to destroy weeds if farmers had enough labour available at wages they could afford to pay. An answer in part to that is, we must in any case apply the labour we have in such a way as to make it effective and then seek to improve local conditions as much as possible so that farmers will be able to employ labour the whole year. The report comes that where farmers employ hired help for twelve months they have little trouble in getting it, and if they provide a cottage they can get good help. But where the farmer employs hired labour for only a few months in the year he finds it is not the kind he wants. A man cannot live for twelve months on the wages for five months' labour on a farm, and so the farmer who is able to engage his help for only five months or less is not able to get a trained farm worker. The labour situation is one full of difficulty at present. Perhaps local organization of farmers would enable them to cope successfully with it also.

There appears to be waste from overstocking single small farms with machinery and a loss owing to lack of proper care of the machinery. Salesmen who are glib of tongue can persuade the new farmer to buy every kind of machine until he is loaded up with machinery—and notes. In consequence the newcomer gets a wrong start and when he gets in wrong at the start he is incapable of making that progress which we all desire and expect in Canada. A few illustrations by the best farmers as to the right sort of machinery for the locality, how to use it, and take care of it would be immensely valuable. That is what we learn from the farmers themselves.

APPENDIX No. 3

ILLUSTRATION FROM DENMARK.

I have kept the committee longer than I intended this morning, but I want to present the outlines of an illustration from Denmark and one from Ireland. I am not going to divert your attention from the important matters, on which I am speaking this morning, and I bring in these references to Denmark and Ireland only so far as they indicate what may be done in Canada to meet our conditions. When I went to Denmark first 25 years ago I learned that the leaders of the movement for the improvement of agriculture there recognized the value of the teaching power of the most successful farmers in the Kingdom. The Royal Agricultural Society by means of grants enabled hundreds of young farmers to learn the systems and methods of farming from many of the best farms in the country. These young farmers lived and worked and learned on these selected farms. The period might be three months or six months or a year; and sometimes a young farmer would work on two, three, or even four such farms before he returned to his own home. I, myself, visited a farm where 70 such student farmers were working. They were not going to college to be trained in the theories; they were on this farm to learn how that farmer farmed to make money.

By Mr. Schaffner:

Q. How big was the farm?

A. That farmer kept 250 dairy cows. He also grew a large quantity of sugar beets. I think he had 700 acres in that farm. These young farmers were given instruction in the theories once a week. The practice was not confined to large farms. All over Denmark the best farmers of the locality could have their farms approved and receive these young farmers who came under grants from the Royal Agricultural Society. In general the conditions were that the student farmer must work for three or six months or a year, and at the end of every period write a report to the society upon what he had seen and done and learned. In a few years the best practice of the best farms became the common knowledge of the farmers of the whole kingdom.

By Mr. Thornton:

Q. Has that system been considered very successful?

A. Yes. By means of it the best farms where the men were doing remarkably well became known all over Denmark, and more than that their systems and methods were adopted. Afterwards came the co-operative organizations for creameries, and bacon curing establishments. These co-operative societies are for managing some part of the agricultural business of the locality and not for doing the farm work. Every locality is practically doing for itself in detail what the Royal Agricultural Society did for the Kingdom long ago. I visited several localities and learned how intimate and thorough were the mediums of exchange. The community spirit which the Danes have in a very large measure—more than we have as yet, perhaps because of the conditions of their national life in the past—has been applied to the problems and difficulties of the farms; and so they have risen from poverty, from dire poverty after the war with Germany, to being regarded as the most prosperous agricultural people as a whole on the face of the earth today. I know localities in Canada where farmers are doing better than in Denmark; I know such localities also in the United States and in England and Scotland. The Danes excel in having levelled up in general; we in Canada excel in the exceptions. Take one illustration. They send large quantities of butter, bacon and eggs to the United Kingdom. They get high prices because of the superiority of the quality resulting from their methods of managing. They take out of the United Kingdom annually over eight millions of dollars more than other nations obtain for an equal quantity of the same products. They

get more, as a premium on the quality of their butter, bacon and eggs, than is spent on our whole system of rural education in Canada.

ILLUSTRATION FROM IRELAND.

I turn for a few minutes to Ireland. I am not going to trench upon the forthcoming report of the Royal Commission on Industrial Training and Technical Education or give any information from it in advance. That is reserved for our report to the Minister of Labour. Meanwhile in Ireland one could not help observing that there was a change of attitude, a change of front, among the rural population within the last ten or twelve years. The change in the experience of the farmers, in their outlook and expectations, is due to the extension of local organization among the farmers and to the diffusion among them of the practice of the best methods of the best farmers. I was much interested when the Secretary of the Department of Agriculture and Technical Institution said to me: 'Will you go to see the Colonists?' For a moment I wondered whether the Irish had begun a policy of immigration to make up for the long wide deep drain of emigration to America and Canada. Perhaps I would see on the west coast new settlements of Spaniards taking to farming in Ireland. However, we went to see the Colonists. They were Irish Colonists, who had never left Ireland, becoming settled into a prosperous community of small farmers co-operating for the common good. A large pasturing estate had been taken over under the land legislation and divided into small holdings of from 25 to 35 acres each. The Colonists, from a congested district less than 20 miles away, had had little experience in good farming. I was amazed at the character of the crops, the evidence of good farm work, the tidiness of the premises, and general appearance of the Colony. Some 250 holdings were occupied and cultivated; about 50 more were in process of preparation by the erection of buildings, &c. The Colonists become peasant proprietors. I saw them in the third year of transition—some had been there only one year—and, as I have mentioned before 50 more farms were in process of preparation on this estate. There was a demonstration field for the colony on one of the farms. There was a resident farming instructor who spent his whole time on that little colony. That was his parish. He was under one delightful inhibition or prohibition—he was not allowed to make speeches. Why? Because the department had learned that if a instructor devoted himself to speechmaking he might be explaining theories and not sticking to his job of instructing and illustrating good farm practice in the growing of crops. Sometimes he would visit as many as twelve farms a day, sometimes three farms; and if a new machine was to be started perhaps only one, when the neighbours would all come and see it. The salary of the instructor and other charges amounted to about £150 a year; and from my own observation, supplemented by some inquiry, I would say that the crops on those 250 farms were worth £3,000 ($15,000) more than would have been the case if there had not been a local instructor, and a local demonstration field. And these Colonists had got more than the increase of crops. They had got knowledge, they had developed ability and they had got the farming forces of the locality organized to keep on helping themselves afterwards. That was great. I went, I saw, I was convinced.

By Mr. Schaffner:

Q. Does the labour question give them any difficulty?

A. These were small holdings and I did not learn that they had trouble in that regard.

HOW CAN LOCAL ABILITY BE APPLIED.

I come now to the summing up of what I have laid before you this morning. How can the information gathered for the Committee on Lands from a particular locality become effective in that locality, and how can the farming ability discovered

in the locality become effective there, plus all the help these farmers can get from other sources? The farmers who are learning, learn much from their successful neighbours. That is how they learn. If we could bring about such contacts that more of them will learn, and all of them will learn more, we will have made a fine advance towards the solution of many of the difficulties. Let the farmers of the locality be invited to come together for some definite purpose in which they are directly interested in the locality. Let them agree on one farm which they will use jointly, not own jointly or manage jointly, but use jointly, for the purpose of getting useful information for themselves, for the improvement of their farm management and practice. Let them agree on some one of the best farmers and help him by discussion and counsel, and even by all kinds of criticism of his methods, to adopt the best system and methods for himself and for the locality. By this means each of the farmers who watches and co-operates would be able to apply to his own farm what he had observed and learned. That does not cost money; it costs time and labour and the exercise of neighbourhood goodwills.

COSTS OF THE SURVEY.

By Mr. Best:

Q. Does the government appropriate money to help a man who devotes his farm to this system of co-operation, in case anything should go wrong?

A. The Committee on Lands has no money to devote to that purpose. The farmer would not give his farm to the neighbourhood. He would obtain advisory help to enable him to make his farming operations more profitable to himself. The other farmers would learn from that what they most want to know— how to make their farming more profitable than it has been. The Committee on Lands has no means of giving a bonus, or money grant, to any of these farmers. The survey of farms costs a certain amount for expenses. I think last year the cost was less than $4,500. The members of the Committee do not get any pay, and do not want any pay. The collectors were paid and travelling expenses had to be met. This big survey of farms for the whole of Canada did not cost in cash more than $4,500.

Q. Do you think that is justice to the farmers of this country when only $4,500 were spent.

A. I am showing in this only the kind and extent of work this Committee on Lands is doing and the amount spent last year on this investigation. I am not referring to the amounts spent for the benefit of agriculture by the government. Speaking for myself I cannot say how much time I devoted to this work. As to remuneration I think I got my travelling expenses on one occasion, in all under $40. The ultimate object of those engaged in the work has not been to induce the government to spend money, but to persuade the farmers to get together and do things for themselves. I am sure the Minister of Agriculture will agree with me that anything we can do to get the farmers to help each other by associated effort is a good thing. They may need more help from the Department of Agriculture by and by.

ILLUSTRATION FARMS MANAGED FOR PROFITS.

To return to my summing up. For what purpose would these men agree on a farm in the locality from which to get information. In the first place I think they would agree on a farm on which they could see the kind of farming, the system and methods which were particularly profitable and successful in that locality. Therefore, the man on the local illustration farm must farm for profit. If he is put on a salary he may farm for the salary and also to furnish useful information; but that is different from farming for profits to himself from his work. The contacts with the neighbouring farmers are on a different basis. Besides I would not like, with the experience I have had, to take a farm owned by a government and maintained

by a government and try to make it pay. It would be a pretty hard thing to do. The employees would be paid by salary under the government; and the research side, the new experiment side, perhaps even the show appearance side, would outweigh the effort to make it pay. The Experimental Farms for research are properly owned and maintained by the government. The illustration farm for profits is properly owned and managed by the individual farmer in the locality. The neighbours would see and understand that kind of farming; and if they meet on such a farm once a month and talk over matters with the farmer who is their natural leader they will share the benefits. They will not take the management out of his control. He owns the farm, he farms it for his own profit, he gets the benefit of the associated criticism, and counsel of his neighbours. He should get one thing more. We are making arrangements whereby he will receive visits two or three time a year from two of the best experts on farming in the whole country. These will be visits for investigation, for counsel, for advice, for making plans, all within the means and the desire of the farmer himself.

EXPERT COUNSELLORS TO CO-OPERATE WITH FARMERS.

Further, if when those two experts go to his farm they could meet also once or twice a year the other 30 or 40 farmers associated in the movement and talk over with them the conditions and needs of the locality, every one would get something in the way of helpful information. The illustration farmer would not get money, but he would get encouragement and such inspiration to work better that he would make more money. Four things such a farm ought to do. It should illustrate the best system of rotation of crops for that locality; it should illustrate the use of selected seed grain suitable for the locality; it should illustrate the results from sowing a suitable quantity of clover seed with the grain crops; and it should illustrate after harvest cultivations in keeping with what is practicable in the locality. Out of the joint judgment of the illustration farmer and these two experts, plans would be evolved that would prove increasingly profitable. It may be asked, how would such a farmer obtain the selected seed suitable for his farm? That is what the Canadian Seed Growers' Association is for. Through it he could obtain pure seed from selected grain, which would provide object lessons for the whole locality. For a year or two the Committee on Lands, in following up its investigations, might even arrange for him to exchange his feed grain, bushel for bushel, for seed grain until he got into the use of the right strains. In a similar manner it might be arranged for him to obtain the additional quantity of clover seed required to sow at least four-fifths of the area in grain crops at the rate of 12 lbs. of clover seed per acre. By some such means there could be many local illustration farms which were yielding satisfactory profits and on which weeds were being kept down and fertility was being kept up.

I have every reason to believe from what we learned from the survey that 30 or 40 of these farmers whose farms have been surveyed would jump at the chance of co-operating towards accomplishing these benefits for their localities, not for any money, but for the satisfaction of being associated with their neighbours to help one another in that way. If something of this sort can be brought about, look at the value of the information we of the Committee on Lands would have for this Committee in a few years in the records of the progress and in the records of the balance sheets of the illustration farms. That is part of what I hope the Committee on Lands will contribute as its share, through these surveys, towards the solution of these big and difficult problems for the advancement of agriculture.

BETTER FARMING, BETTER BUSINESS, BETTER LIVING.

I do not come before this Committee either to ask for its endorsation or for its assistance to obtain grants of money. I thought it proper that the Chairman of the Committee on Lands of the Commission of Conservation should come before the Com-

mittee on Agriculture of Parliament to inform you of what we have been doing, what is to be done next, and to indicate the probable results. You will allow me to say, in conclusion, that I have lived long to have learned the value of concentration on a few things at a time, on a few definite things for a definite purpose, if one desires to get much done. I would rather come and speak to you this morning on this subject than address a crowd of a thousand people in the opera house. The particular form of leadership which this movement needs in all the localities, is interpretation of its object, its plans and its methods, in such a way as to encourage farmers to join in neigbourhood co-operations, not to secure Government grants, but to render service to each other by associated effort for better farming. When we have successfully sought these local illustration farms managed by the people themselves, I think in agricultural matters all other things will be added to us. We will achieve in the famous saying of Sir Horace Plunkett, of Ireland, himself a foremost leader in rural co-operation, 'Better Farming, Better Business, Better Living.' Then every effort of every Department of the Federal and Provincial Governments for the improvement of agriculture would be more effective and widespread. What would it mean to everybody, to farmers, to manufacturers, to merchants, to transportation companies, to professional men, and to education to have $500,000,000 a year more from the crops on the same area as the result of the improvements in agriculture? And besides this, we would be passing on this great heritage in our lands continuously enriched and improved instead of being depleted. The work of the Committee on Lands is all towards that end, and I thank you for having heard me so patiently this morning.

Committee adjourned.

Certified correct,

JAMES W. ROBERTSON.

ADDENDUM.

Schedule used by Committee on Lands in Survey of Farms.

COMMISSION OF CONSERVATION.

Agricultural Survey, 1911.

No.....

1. Lot..... Con..... Township..... County..... Province.....

Name of farmer..... P. O.....

Under field crops.....acres. Grain .....acres.

In permanent or unbroken pasture.....acres. Hoe crop .....acres.

In woods .....acres. Hay and pasture .....acres.

Rotation, Seed and Manure.

2. Does he follow a systematic rotation of crops?.....

Does he practice any of the following rotations?.....

1.	2.	3.	4.	
Hoe crop.	Hoe crop.	Hoe crop.	Hoe crop.	
.....	.....	.....	.....	.....
Grain.	Grain.	Grain.	Grain.	
.....	.....	.....	.....	.....
Hay.	Hay.	Grain.	Grain.	
.....	.....	.....	.....	.....
	Pasture.	Hay.	Hay.	
	.....	.....	.....	.....
			Pasture.	
				.....

State in above columns kinds of crops in rotation.....

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3. Does he use seed selected in any systematic manner?.....

If not, why not?.....

Does he sow specially cleaned seed grain or ordinary feed grain?.....

....

State names of varieties sown:

Wheat .....

Oats .....

Barley .....

How many acres seeded to clover this year?.....

Pounds of seed sown per acre of red clover?.....Alsike?.....

If he grows alfalfa, how much, when and how sown?.....

How does the yield of crops from his farm compare with ten years ago?.....

With twenty years ago?.....

4. Does he use manure?..... On what crops and rate per acre?.....

....

Does he use artificial fertilizers?.....

On what crops and rate per acre?.....

....

How does he apply manure?.....

What care is taken to prevent waste?.....

Weeds, Insects and Diseases.

No.....

5. Which weeds are most prevalent? Before name of weed the letter (A) means few, (B) numerous), (C) very bad;

(N) new to farm, (I) increasing, (D) decreasing within five years.

	A, B, C.	N, I, D.			A, B, C.	N, I, D.	
1.	....	....	Barnyard Grass.	18.	....	....	Mustard.
2.	....	....	Bindweed.	19.	....	....	Night Fl. Catchfly.
3.	....	....	Bladder Campion.	20.	....	....	Orange Hawkweed.
4.	....	....	Blue Burr.	21.	....	....	Ox-eye Daisy.
5.	....	....	Blueweed.	22.	....	....	Pigweed.
6.	....	....	Canada Thistle.	23.	....	....	Ragweed.
7.	....	....	Chickweed.	24.	....	....	Rib Grass.
8.	....	....	Chicory.	25.	....	....	Shepherd's Purse.
9.	....	....	Couch Grass.	26.	....	....	Sow Thistle.
10.	....	....	Darnel.	27.	....	....	Stinkweed.
11.	....	....	Golden Rod.	28.	....	....	Tumbling Mustard.
12.	....	....	Green Foxtail.	29.	....	....	Wild Buckwheat.
13.	....	....	King Devil.	30.	....	....	Wild carrot.
14.	....	....	Lady's Thumb.	31.	....	....	Wild Flax.
15.	....	....	Lamb's Quarters.	32.	....	....	Wild Oats.
16.	....	....	Mayweed.	33.	....	....	Yarrow.
17.	....	....	Milkweed.		....	....	.....
	....	....	.....		....	....	.....

State causes responsible for foregoing.....

....

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6. What insect pests or plant diseases injure his crop. Use letters (A) (B) (C) and (N) (I) (D) in same sense as for weeds.

A, B. C.	N, I, D.		A, B, C.	N, I, D.	
1.	....	Codling Moth.	8.	....	Apple Scab.
2.	....	Cut Worm.	9.	....	Oat Smut.
3.	....	Potato Beetle.	10.	....	Potato Blight.
4.	....	Pea Weevil.	11.	....	Potato Rot.
5.	....	Turnip Aphis.	12.	....	Potato Scab.
6.	....	White Grub.	13.	....	Rust.
7.	....	Wire Worm.	14.	....	Turnip Clubroot.
....	....	.....	15.	....	Wheat Smut.
....	....	.....	....	....	.....
....	....	.....	....	....	.....

Crop.	Pest or Disease.	Estimated Loss.
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....

Is seed grain treated for smut?.....

Fuel, Power and Water.

No.....

7. Is the fuel wood or coal?.....

If wood from farm is used, how many years at present rate of consumption will the supply last?.....

How many acres of the unbroken pasture would be more profitable if forested and utilized as a woodlot?.....

Has any planting been done, if so with what results?

.....

.....

8. What motive powers are used on the farm?.....

House and barn work.....

Field work .....

9. Is the water supply for house use obtained from well, spring, or stream?.....

Where is water for stock obtained?.....

State distance, in feet, of well or spring from house, stable, or manure dump?

.....

House supply?..... Stock supply?.....

How is water conveyed to house?.....

Is there water on tap in the house?.....

Is there a bathroom and W.C. in house?.....

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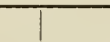
10. Plot in diagram the positions of well, spring, or stream, and the farm buildings; and indicate by arrow heads the general slope of ground in relation to the well. The area below may be taken at 400 feet square. An arrow one inch long indicates a very gentle slope (1 in 50); an arrow half-inch long, a steep slope (1 in 20; an arrow a quarer of an inch long, a very steep slope (1 in 5). (Thus  indicates a very gentle slope downwards in direction of arrow head as 1 in 50). (The rectangles are each ½ an inch square.)

Instances of Good Farming.

No.....

(Particularly as to Rotation, Crops and Fertility.)

TOTAL POINTS:

1500

			POINTS. Possible.	Awarded.
I.	500	PLAN OF ROTATION.		
		Legumes and grasses.	100	.....
		To keep down weeds.	100	.....
		Control of moisture.	100	.....
		Distribution of labour.	100	.....
		Quality of seed.	100	.....
II.	500	CROPS.		
		Stand vigour and uniformity.	100	.....
		Yield per acre.	100	.....
		Freedom from other grains.	100	.....
		Freedom from weeds.	100	.....
		Freedom from diseases and insects.	100	.....
III.	200	PRODUCTION AND CARE OF MANURES.	200	.....
IV.	300	EQUIPMENTS.		
		Water supply and sanitation.	100	.....
		Care of machinery and implements.	100	.....
		Care of fuel supply.	100	.....
		TOTAL		

APPENDIX No. 3

Does the farmer indicate any drawback or menace to profitable continuation of any branch of his present system of farming?.....

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In what branch of farming does he specialize?.....

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Collector's remarks regarding above.....

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Dated at.....191...

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Collector.

NOTE.—Special sheets were used in the Provinces of Manitoba, Saskatchewan and Alberta.